Compliance First
Evaluation of Solid Waste Facilities' State Standards

Chip and Grind

Construction and Demolition Inert Processing Operations

Composting Facilities

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Solid Waste Landfills

Solid Waste Landfills

Compliance First: Evaluation of Solid Waste Facilities' State Standards

Introduction

- Landfills are the primary means of waste disposal. Today's landfills are designed, constructed and operated to meet a wide range of regulations that are intended to protect human health and the environment.

A Multi-step Process

Landfills perform a few basic steps including:

1) Receiving
2) Processing
3) Disposal

Top Violations

- *T27 20510* *Disposal Site Records*
- *T27 20530* *Site Security*
- *T27 20650* *Grading of Fill Surfaces*
- *T27 20680* *Daily Cover*
- *T27 20700* *Intermediate Cover*
- *T27 20750* *Site Maintenance*
- *T27 20820* *Drainage and Erosion Control*
- *T27 20830* *Litter Control*
- *T27 20919.5* *Explosive Gas Control*
- *T27 21600* *Report of Disposal Site Information*

Disposal Site Records
27 CCR § Section 20510

- *(a) Each site operator shall maintain records of weights or volumes accepted in a form and manner approved by the EA. Such records shall be submitted to the EA upon request, accurate to within 10 percent and adequate for overall planning purposes and forecasting the rate of site filling.*
- *(b) Each site operator shall maintain records of excavations which may affect the safe and proper operation of the site or cause damage to adjoining properties.*

Disposal Site Records
27 CCR § Section 20510

- *(c) Each site operator shall maintain a daily log book or file of the following information: fires, landslides, earthquake damage, unusual and sudden settlement, injury and property damage accidents, explosions, receipt or rejection of unpermitted wastes, flooding, and other unusual occurrences.*
- *(d) Each site operator shall maintain a record of personnel training as required in section 20610. (3) One (1) pike pole or comparable pole at least 10 feet in length to separate burning from nonburning tires; and*
- *(e) Each site operator shall maintain a copy of written notification to the EA, local health agency, and fire authority of names, addresses and telephone numbers of the operator or responsible party of the site as required in section 20615.*

Disposal Site Records
27 CCR § Section 20510

- *(f) Disposal site records, including MSWLF unit records, shall be available for inspection by authorized representatives of the EA, the local health agency and the CIWMB during normal business hours and retained near the site in an operating record or in an alternative location approved by the EA.*

What Triggers a Violation?

- Site operator maintaining inadequate records
- Disposal Site records not available
- Anything else?

Site Security
27 CCR § Section 20530

- The site shall be designed to discourage unauthorized entry by persons or vehicles by using a perimeter barrier or topographic constraints. Areas within the site where open storage or ponding of hazardous materials occurs shall be separately fenced and or otherwise secured as determined by the EA. The EA may also require that other areas of the site be fenced to create an appropriate level of security.

Site Security
27 CCR § Section 20530

- *Gates should be locked after operating hours. Damaged fencing should be repaired. Separate fencing and warning signs are strongly recommended for areas designated for septage or sewage sludge. If sites are open continuously (24 hours), site attendants should keep gates and ponds under surveillance. The inspector should look for signs of illegal entry such as tire tracks that enter the facility at the site perimeter.*

Site Security

- Site security requirements can vary from one landfill to another depending on the site's characteristics
- How would a small, rural landfill differ from a large, urban landfill in regard to site security issues?

Grading of Fill Surfaces
27 CCR § Section 20650

- *Covered surfaces of the disposal area shall be graded to promote lateral runoff of precipitation and to prevent ponding. Grades shall be established of sufficient slopes to account for future settlement of the fill surface. Other effective maintenance methods may be allowed by the EA.*

Guidelines
Grading of Fill Surfaces

- A violation should be considered if, during the inspection, there is evidence of extensive ponding or poor lateral runoff (e.g., a smooth silt layer) on fill surfaces due to subsidence or improper grading. A violation may be cited if, during dry weather, there are extensive depressions that could allow ponding should precipitation occur, or grading of fill surfaces does not promote lateral runoff. The operator should be encouraged to conduct periodic surveys to determine if the grades of fill surfaces are adequate.

Too Much …Too Little

- Appropriate slope will minimize ponding without causing erosion.
- Requirements can vary depending on climate, soil type, etc.

What Triggers a Violation?

- Extensive ponding or poor lateral runoff
- Anything else?

Daily Cover
27 CCR § Section 20680

- *(a) Except as provided in ¶ (b), and (f) and Section 20690, the owners or operators of all municipal solid waste landfill units shall cover disposed solid waste with a minimum of six inches of compacted earthen material at the end of each operating day, or at more frequent intervals if necessary, to control vectors, fires, odors, blowing litter, and scavenging. For the purposes of this section, the operating day shall be defined as the hours of operation specified in the solid waste facility permit, and may extend for more than 24 hours if operations are continuous.*

Daily Cover
27 CCR § Section 20680

- *(b) The EA, with concurrence by the CIWMB, may grant a temporary waiver from the requirements of (a) if the owner or operator demonstrates that there are extreme seasonal climatic conditions that make meeting such requirements impractical.*

Daily Cover
27 CCR § Section 20680

- *(c) Earthen material or alternative cover materials of alternative thickness shall be placed over all surfaces of disposed solid waste for other than municipal solid waste landfill units, as required by the EA to control vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment.*

Associated Problems

- Daily cover is a prescriptive standard (6” or equivalent) that is often measured as a performance standard (is it working?)
- Here are some criteria:
  - Exposed waste?
  - Preventing litter?
  - Preventing vectors?
  - Controlling litter?
  - Minimizing odor?

Intermediate Cover
27 CCR § Section 20700

- *(a) Compacted earthen material at least twelve (12) inches shall be placed on all surfaces of the fill where no additional solid waste will be deposited within 180 days to control vectors, fires, odors, blowing litter, and scavenging.*
- *(b) Alternative materials of alternative thickness (other than at least twelve inches of earthen material) for intermediate cover may be approved by the EA with concurrence by the CIWMB, if the owner or operator demonstrates that the alternative material and thickness control vectors, fires, odors, blowing litter, and scavenging without presenting a threat to human health and the environment.*

Intermediate Cover
27 CCR § Section 20700

- *(c) For waste classification, composition, and liquid percolation requirements of intermediate cover and alternative intermediate cover, refer to the SWRCB requirements set forth in section 20705 of this article.*
- *(d) Proposed use of alternative intermediate cover shall be subject to site specific demonstration to establish suitability as intermediate cover. Demonstration projects shall be approved by the EA with concurrence by the CIWMB.*

Site Maintenance
27 CCR § Section 20750

- *The operator shall implement a preventative maintenance program to monitor and promptly repair or correct deteriorated or defective conditions with respect to requirements of the CIWMB standards, and conditions established by the EA. All other aspects of the disposal site shall be kept in a state of reasonable repair.*

Site Maintenance

- What is the balance between prescriptive and performance in regard to site maintenance …say in regard to equipment?
- How does the landfill's compliance history factor in?

What Triggers a Violation?

- Operator has no preventative maintenance program
- Disposal Site is in a poorly maintained state.
- Anything else?

Drainage and Erosion Control
27 CCR § Section 20820

- *(a) The drainage system shall be designed and maintained to:*
  - *(1) Ensure integrity of roads, structures, and gas monitoring and control systems;*
  - *(2) Prevent safety hazards;*
  - *(3) Prevent exposure of waste.*

Drainage and Erosion Control

27 CCR § Section 20820

- *The adequacy of the drainage structures may be determined by comparing them with the design specified in the JTD and should be verified with the RWQCB. Erosion on any area of a disposal site's fill surface that exposes waste and has not been promptly repaired should signal the inspector that the site may be in violation of this section. Also, the inspector should look for erosion in nonwaste areas that undermines roads and structures causing a potential safety hazard or threatens the integrity of environmental control systems.*

Associated Problems

- Drainage and erosion problems can occur in many forms. Here are some examples:
  - Erosion
  - Slope damage
  - Liner / Cap failure
  - Exposed waste
  - Sedimentation
  - Unstable stockpile
  - Inlets and downdrains

Erosion

- Erosion can occur at any landfill, though some are more susceptible than others.
- Key factors are:
  - Slope
  - Runoff
  - Soil type
  - Slope length

Slope Damage

- Slope damage can result from excessive erosion. In some cases, slope damage results when runoff water is allowed to run down the face of a slope unchecked.

Liner / Cap Failure

- Slope erosion can damage the liner. The most common failure is related to the operations layer of soil. If a supporting layer of waste is not placed against the ops layer before the onset of wet weather, the ops layer can be washed away.

Exposed Garbage

- At many landfills, garbage may be exposed when slopes erode. This can cause serious problems in terms of allowing garbage (and possibly contaminants) to contact surface runoff water.

Sedimentation

- As soil is eroded, it is carried downstream as long as the velocity (and associated turbulence) of the water is high enough to keep the soil particles suspended. However, once the velocity of the water slows, the soil particles will begin to settle out of the water.

Unstable Stockpile

- Most landfills have one or more soil stockpiles. Erosion prevention on stockpiles may include flat slopes, drainage benches, downdrains, seeding, guarding, and some means of containing sediment.

Inlets and Downdrains

- Inlets should be protected from litter and sedimentation
- Downdrains should be designed to transport runoff safely down slopes

Litter Control
27 CCR §20830

- *Litter shall be controlled, routinely collected and disposed of properly. Windblown materials shall be controlled to prevent injury to the public and personnel. Controls shall prevent the accumulation, or off-site migration, of litter in quantities that create a nuisance or cause other problems.*

Rules of Thumb - Litter

For many landfills litter is one of the biggest problems. When evaluating litter control, consider the following:

- Is litter adequately controlled?
- Is litter routinely picked up?
- Have complaints been filed?
- Is litter being scattered on public roads?
- Has litter blown offsite?
- Has litter been allowed to accumulate?
- Is the size of the working face contributing to the litter problem?
- Is this a particularly windy site?
- Are sensitive receptors such as wetland or rare habitat areas nearby?

Covered vs. Uncovered Loads

- A good idea for any disposal site is to charge an additional fee for uncovered loads. An uncovered load can impact the generation of litter at the disposal site. Charging customers an extra fee not only makes the customers cover their loads more but also prevents litter from accumulating on roads to the disposal site and within the disposal site.

Explosive Gas Control
T27 CCR § Section 20919.5

- *(a) Owners or operators of all MSWLF units must ensure that:*
  - *(1) The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components); and*
  - *(2) The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary.*

What Triggers a Violation?

- Concentration of methane gas generated by the facility exceeds over 25 percent of the lower explosive limit.
- Concentration of methane gas exceeds the lower explosive limit for methane at the facility property boundary.
- Anything else?

Explosive Gas Control
T27 CCR § Section 20919.5

- *(b) Owners or operators of all MSWLF units must implement a routine methane monitoring program to ensure that the standards of (a) are met.*
  - *(1) The type and frequency of monitoring must be determined based on the following factors:*
    - *(i) soil conditions;*
    - *(ii) the hydrogeologic conditions surrounding the facility:*
    - *(iii) the hydraulic conditions surrounding the facility; and*
    - *(iv) the location of facility structures and property boundaries. Except as provided in (f).*
  - *(2) the minimum frequency of monitoring shall be quarterly.*

Explosive Gas Control
T27 CCR § Section 20919.5

- *(c) If methane gas levels exceeding the limits specified in (a) are detected, the owner or operator must:*
  - *(1) immediately take all necessary steps to ensure protection of human health and notify the EA;*
  - *(2) within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health; and*
  - *(3) within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the EA that the plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.*
  - *(4) The EA with concurrence by the CIWMB pursuant to 40 CFR 258.23(c)(4) may establish alternative schedules for demonstrating compliance with (c)(2) and (c)(3).*

Explosive Gas Control
T27 CCR § Section 20919.5

- *(d) For purposes of this section, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25 degrees Celsius and atmospheric pressure.*
- *(e) The EA shall forward notifications and approvals pursuant to Section 20919.5(c)(1) and (c)(3) to the CIWMB pursuant to 40 CFR 258.23(c)(1)and (c)(3).*

What Triggers a Violation?

- The owner or operator has not notified the EA of excessive methane gas limits.
- After seven days of excessive methane gas levels, owner or operator hasn't recorded a log of the steps that he/she took to protect human health.
- Anything else?

Explosive Gas Control
T27 CCR § Section 20919.5

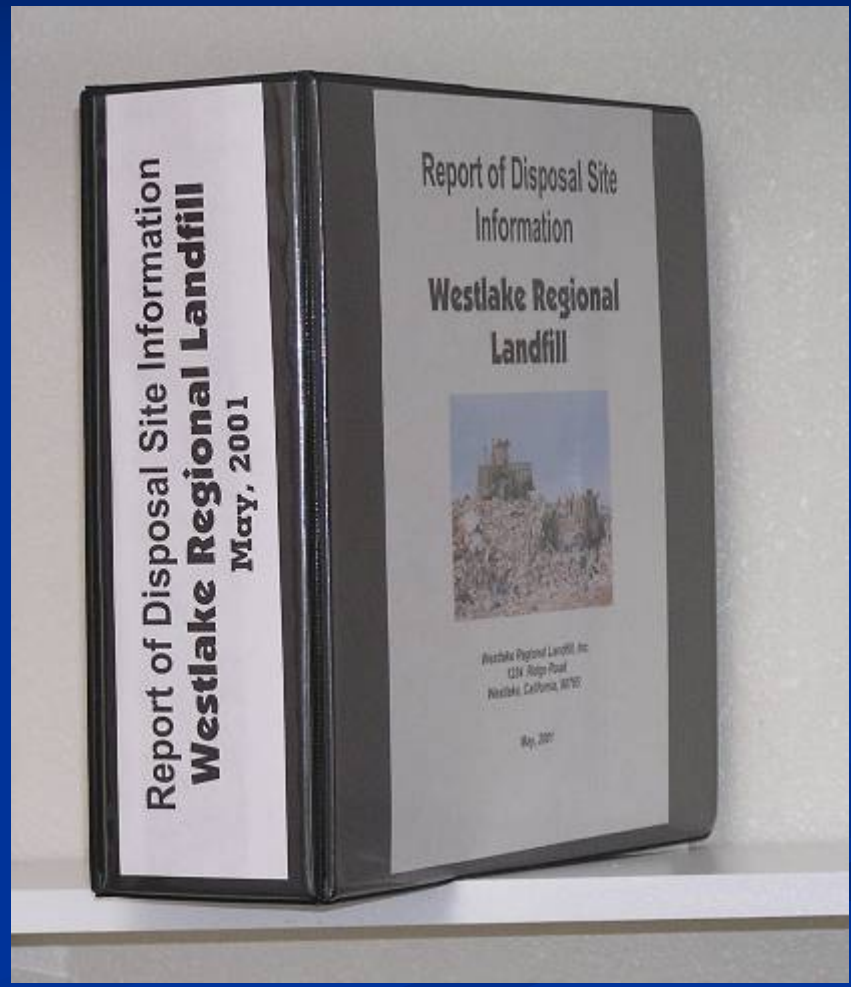
- *(f) For those MSWLF's that accept for disposal 20 tons or less of municipal solid waste per day based on an annual average, the EA, with concurrence by the Board, may establish alternative frequencies for explosive gas monitoring after consideration of the unique characteristics of small communities, climatic and hydrogeologic conditions, and protect of human health and the environment. Any proposal to allow an alternative frequency shall be available for public review for a minimum of 30 days to allow affected parties the opportunity to comment. Documentation of the considerations, public comment, and Board concurrence for any alternative frequency shall be placed in the operating record. The Executive Director or the EA may condition. limit, suspend, or terminate an operator's use of an alternative monitoring frequency if it is determined that the alternative frequency would cause harm to public health and safety, or the environment.*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(a) In order to obtain a solid waste facility permit, each operator of a disposal site must file with the EA a RDSI as required in section 21600 and section 21590. The information contained in the RDSI shall be used to determine whether a permit should be issued and to provide information to be included within the permit if applicable. In order to maintain the permit, the operator must file amendments to the RDSI as required in section 21665. Such amendments or lack thereof may become the basis for changes in the permit or for revocation of the permit. The submittal shall contain only those items listed in section 21570(f) that have changed or otherwise specified by the enforcement agency.*

RDSI – Common Problems

- One of the most common RDSI problems results when the RDSI doesn't reflect current operations



Report of Disposal Site Info.
T27CCR § Section 21600

- *(b) A RDSI shall contain the following:*
- *(1) General*
  - *Facility Overview*
  - *Site Plan*
  - *Hours*
- *(2) Waste Classification and Management*
  - *Waste Types/Volumes*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(3) Waste Management Unit Classification and Siting*
  - *Airport Safety*
  - *Volumetric Capacity*
  - *Site Life Estimate*
  - *Site Location*
  - *Land Use*
  - *Ancillary Facilities*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(4) Design and Construction Standards for all Sites*
  - *(A) General Design Parameters*
  - *(B) Design Responsibility*
  - *(C) Construction Sequencing Plans*
  - *(D) Grading Plan*
  - *(E) Gas Management Plan*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(5) Operating Criteria*
  - *Records*
  - *Security*
  - *Sanitary Facilities*
  - *Communications Systems*
  - *Lighting*
  - *Safety Equipment*
  - *Personnel Requirements*
  - *Personnel Training*
  - *Supervisory Structure*
  - *Spreading and Compaction*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(6) Cover and Beneficial Use*
  - *Cover Materials Use*
  - *Alternative Daily Cover and Beneficial*
  - *Cover Frequency*
  - *Intermediate Cover*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(7) Handling*
  - *Public Health Design Parameters*
  - *Salvaging Activities*
  - *Volume Reduction Activities*
  - *Equipment*
  - *Waste Handling*
- *(8) Controls*
  - *Nuisance*
  - *Fire*
  - *Leachate*
  - *Dust Control*
  - *Vectors*
  - *Drainage and Erosion*
  - *Litter*
  - *Noise*
  - *Traffic*
  - *Hazardous Waste*

Report of Disposal Site Info.
T27CCR § Section 21600

- *(9) Compilation of approvals — Provide a list of all approvals having jurisdiction over the disposal site.*

Virtual Inspection Photo 1

- Alternative Daily Cover … any problems?

Virtual Inspection Photo 2

- Drainage issue…
  any problems here?

Virtual Inspection Photo 3

- Off site litter…
  any problems here?

Virtual Inspection Photo 4

- Site Maintenance… What other maintenance can be done at our facility?

Virtual Inspection Photo 5

- Site Security… How is our facility secured?

Virtual Inspection Photo 6

- Grading…
  Any problems?

Virtual Inspection Photo 7

- Gas Collection System…
  Any problems here?

Wrap up Questions?

- Any questions on solid waste landfill facilities?
- How about some examples of what you see out there in the real world?